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## Analysis of Factors Affecting Brand Strengthening Drivers in E-Commerce: A Study of the Iranian Tourism Industry

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### Abstract

In the last decade, Information and Communication Technology (ICT) was used as the most effective tool to help businesses gain a competitive advantage by attracting customers. Thus, ICT has significantly contributed to the growth of e-commerce. Internet access allows e-commerce to spread globally and cheaply. However, many organizations did not realize the potential value created by e-commerce. Since the provision of information and branding at the destination necessarily involves the focused attention of all tourism companies in the destination, e-commerce can lead to the development of a new distribution channel in a virtual network and connects the producer with the customer. To this end, the present study analyzed the factors affecting brand strengthening drivers in e-commerce in the Iranian tourism industry. Brand strengthening drivers were ranked using Shannon's entropy method. The results indicated that advertising and brand communication are the most effective brand strengthening drivers.

**Keywords:** Brand strengthening, E-commerce, Tourism industry.

## 1 | Introduction



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Tourism is a relatively long value chain industry [1] and is considered one of the largest sectors in the world. The tourism industry has generated about 11% of Gross Domestic Product (GDP), employed 200 million people, and serves 700 million tourists worldwide [2]. Searching for information on booking, transportation, accommodation, and destination is a process in which suppliers, intermediaries, and customers have traditionally played their part using their information systems. However, the whole structure of the tourism industry is changing [1] and this may be easily understood [3]. Thus, the internet can promote tourism products and services offered by tourism companies because it provides an unprecedented level of connectivity and enables direct and low-cost communication with tourists. The capacity of the internet to access, organize, and transmit information more efficiently provides new formulas for communication between tourism customers



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and tourism companies, leading to the emergence of new types of economic factors and new business models. Some scholars believe that the development of e-commerce provides good opportunities for both tourists and tourism companies, but presents significant challenges for organizations that require in-depth analysis of marketing strategies and consumer knowledge. Since the internet is a new shopping channel, tourism is often seen as a clean e-commerce industry without security issues [2].

Over the past decades, advances in Information and Communication Technology (ICT) have dramatically changed the way the “ordinary businesses” operate in the tourism sector. Moreover, transactions have become cheaper and faster due to the processing and exchange of information, and business processes are re-engineered to achieve the integrated coordination of a company's value chain activities. E-commerce reduces management costs, facilitates the accuracy and quality of information for decision making, and facilitates strategic collaboration between businesses [4]. Different schools of thought have also come up with different business strategies and policies for the implementation of e-business at the operational level. Porter's theory, for example, implied that every business has to implement a technological strategy to “survive” in a turbulent competitive world [5]. However, some businesses seem to be more advanced and innovative than others that find the following drivers to be more cost-effective, more efficient, and more risk-averse. For example, tourism agents who provide quality services and vacation packages to their customers do not apply innovative strategies by imitating competitors' practices. One problem with this approach is that customers may have become loyal to other businesses that offer similar products and services [6]. However, this approach can be more applicable and successful for many tourism agents who want to achieve low-risk goals.

However, it should be noted that insufficient acceptance of ICT is considered an obstacle to equal opportunities for business activities. Individuals and businesses without access to the internet and related technologies fail to benefit from the electronic services provided and have to gradually leave global markets [7]. ICT has contributed to developing business activities and has become the most effective tool to help businesses gain a competitive advantage by attracting customers. According to Daud Norzaidi et al. [8], the advent of ICT has contributed to the significant growth of e-commerce. In addition, internet access allows e-commerce to spread globally and cheaply. However, Gibbs and Kraemer [9] argued that many organizations did not realize the potential value created through e-commerce. Swati and Kamal [10] reviewed various studies on the impact of e-commerce on the tourism sector at the national level. By comparing British and German tourism organizations, Williams et al. [1] measured the factors that contribute to website access and proposed a set of e-commerce applications that create a more effective online environment. Sigala [11] also measured the impact of e-commerce productivity on tourism hospitality in the UK and found that factors such as payroll systems, ICT infrastructure, and distribution channels were associated with business performance.

Furthermore, in addition to the importance of ICT, branding at the destination has attracted the attention of all tourism companies, and thus e-commerce connects tourism companies with the customer by creating a new online distribution channel [12]. Since the branding strategy focuses on strengthening the brand of the product or even the business, brand strengthening is essential to describe a product in the form of visual designs. These visual designs include brands, logos, words, or things that can attract customers. In addition, the visual design of a brand should be developed in line with the brand identity and brand image of the product and business [13]. Thus, given the importance of brand strengthening through branding in the tourism sector, brand strengthening has been addressed in various studies. For instance, many studies have focused on strengthening the brand image [8], [14], [15], strengthening brand equity [16] and [17], strengthening brand association [18], strengthening brand identity [19], strengthening brand loyalty [20], strengthening brand value [21], strengthening brand awareness [22], strengthening brand communication [23], and strengthening brand trust [24]. Furthermore, a review of the literature on business-related issues indicates that brand strengthening is associated with many factors such as brand awareness, advertising, brand association, trust, loyalty, brand communication, and perceived quality [25], [26]. Accordingly, the present study seeks to identify brand strengthening drivers and to find out the drivers that are more effective in brand strengthening.

## 2 | Literature Review

A review of the literature on business-related issues indicates that brand strengthening is associated with many factors such as brand awareness, advertising, brand association, trust, loyalty, brand communication, and perceived quality [25], [26]. Advertising, brand awareness, perceived quality, brand association, brand communication, brand trust, and brand loyalty are considered brand strengthening precedents in tourism e-businesses. KaffashPoor et al. [27] examined the effects of these factors on each other in tourism businesses and showed that advertising affects brand awareness. Chi et al. [23] also showed that brand awareness affects perceived quality. Furthermore, Rahahleh et al. [28] concluded that advertising as an effective factor in sales promotion influences brand association. Schivinski and Dabrowski [29] found that brand association has a significant effect on perceived quality. According to Kia [30] and Hadadian et al. [31], brand awareness affects brand communication. Zehir et al. [32] also showed that brand awareness and perceived quality can promote customers' trust in the brand. Furthermore, building trust can improve brand loyalty [33].

In addition, since a business brand can differentiate it from other brands, a good branding strategy can be developed by understanding brand strengthening drivers. This section summarizes the most important studies conducted in Iran and other parts of the world. Akbari et al. [20] examined how Corporate Social Responsibility (CSR) affects brand loyalty, hotel positioning, and the intention to revisit, and concluded that there was a significant direct relationship between CSR with hotel brand positioning and an indirect relationship between CSR and intention to revisit through identification, loyalty. Drewniak and Karaszewski [21] examined brand management in a situation of an economic crisis to identify brand value strengthening methods in the scope of emerging markets and concluded that competitive conditions force companies to use newer marketing techniques to create a positive brand image. Latif [34] examined the influence of brand communities on strengthening brand association and concluded that community members believe that advertising activities are necessary for brand positioning and strengthening the relationship between brand and consumers. Rahman et al. [35] studied destination brand equity and tourists' revisit intention towards health tourism and concluded that destination brand equity affects a tourist's intention to revisit health tourism through destination brand association. Feng et al. [36] examined the external impact of international tourism on the brand equity development process of Multinational Firms (MNFs) and concluded that increasing the number of international tourists in the country of origin of MNFs significantly increases the brand equity of the company. This finding was interesting because the impact of international tourism on the brand equity of MNFs has a significant effect even after controlling other key brand drivers such as advertising, research and development (R&D), and dynamic brand equity. The results also indicated that international tourism is a very effective tool to improve the brand equity of MNFs and is 2.5 times more effective than advertising.

Rahahleh et al. [28] examined the effect of electronic service quality on relationship quality in the tourism industry and showed that electronic service quality has a significant effect on relationship quality. Their findings also indicate that ease of use, privacy, and accountability have a positive and significant effect on relationship quality. Sanjari Nader et al. [24] examined the effect of social network-based brand communities on brand evangelism through strengthening brand trust. The results showed that consumer relations with brand components (product, brand evangelism, company, and other customers) in social network-based brand communities have a positive and significant effect on brand evangelism through the mediating role of brand trust. Cheng et al. [37] investigated the relationship between brand value and strengthening with the customer brand engagement in a social networking brand community. The results showed that information search and social interactions are related to customer brand engagement and as a result, customer brand engagement is correlated with brand strengthening. Shirmohammadi et al. [38] examined the effect of social interaction, appearance, and credit value of tourism brands in cyberspace and its impact on the choice of European tourism destinations. They concluded that social network capabilities affect the process of tourist experience of social networks and interaction with tourists. Besides, tourist satisfaction also affects their travel intentions. Moro and Rita [39] examined

brand strategies in social media in hospitality and tourism and concluded that there is a strong relationship between social media and branding, and social media are the most important issue in advertising branding. Ahmadizad et al. [40] examined the effectiveness of e-marketing in the tourism industry and concluded that organizational, environmental, technological, and ease of use have a positive and significant effect on the acceptance and use of e-marketing, with perceived ease of use having the greatest effect and technological factors having the smallest effect. Otilia-Elena [41] examined the role of social media marketing in strengthening the brand image and concluded that creating a successful brand is a goal pursued by every business but requires constant attention to any interaction and experience with consumers. Abdolvand and Honarisharif [42] identified the factors affecting brand loyalty and commitment on social media. The results suggested that improving customer relationships with the company, product, and other customers will improve customer trust in the brand and ultimately increase customer commitment and loyalty to the brand.

### 3 | Research Methodology

This study is an applied study in terms of its objectives and an analytical-descriptive study in terms of the research design and procedure. A researcher-made questionnaire with 7 components and 40 items was used to collect data and identify the research variables. The research sample included 17 managers and faculty members who were selected using purposive sampling. Shannon’s entropy method was used to analyze the factors affecting brand strengthening drivers in e-commerce. For this purpose, a questionnaire was distributed among subject-matter experts using the expert judgment system. The validity of the questionnaire was confirmed through the face and content validity, and its reliability was measured and confirmed with the alpha coefficient of 0.939.

### 4 | Shannon’s Entropy

One of the methods to extract the weight/importance of criteria in multi-criteria decision-making problems is Shannon’s entropy. The entropy weighting method considers more weight for indices that have more variability. As a result, the indices are differentiated through the different weights produced by entropy. According to information theory, entropy represents the measure of uncertainty in the expected information content of a message. In other words, entropy is a measure of the amount of uncertainty expressed by a discrete probability distribution, so that this uncertainty is greater if the distribution is sharper than the frequency distribution [43]. The concept of entropy was introduced by the American mathematician and electronics engineer Claude Elwood Shannon, who is referred to as the father of information theory:

**Step 1.** The Shannon’s entropy for each random phenomenon of a probability distribution is measured as follows:

$$E = S \left( \begin{matrix} P_1 \\ P_2 \\ 0 \\ 0 \\ P_n \end{matrix} \right), \sum_{i=1}^m P_i = 1. \tag{1}$$

The entropy of the phenomena that include indices due to the uncertainty of the numbers within the matrix is estimated as follows:

$$E_j = -K \sum_{i=1}^m [P_i \cdot L_n P_i], K = \frac{1}{L_n m}. \tag{2}$$

Where  $E_j$  is the index entropy;  $m$  is the number of options;  $P_i$  is the probable value of the index for option  $i$ ,  $L_n$  is the Napier or natural logarithm, and  $K$  is a constant that adjusts the entropy between zero and one.

Note that in decision matrices  $m \geq 3$ , indicating such matrices are not applicable for less than 3 options. Thus, we have

$$M = 3 > e = \frac{2}{7} \rightarrow L_n m > 1 \rightarrow \frac{1}{L_n m} < 1, \tag{3}$$

where, the closer the value of  $E_j$ , the closer entropy of index  $j$ , to 1, the effect of the index on the prioritization of the options will decrease to 0. Thus, if a phenomenon or an index is equal in probability for all options, its entropy is 100% or equal to 1. Thus, such an index will have no role in choosing the option. Mathematically, this is to say that if an index for option  $m$  has the same value, its entropy is:

$$E_j = -K \sum_{i=1}^m [P_i L_n P_i] = E_j = 1. \tag{4}$$

In other words, such an index is perfectly entropized and has no role in the choice of options, and as will be shown, its weight is zero. At this stage, the current status matrix is descaled with a clockwise norm.

**Step 2.** The variation or deviation from full entropy for each indicator is calculated as follows:

$$d_j = 1 - E_j, \quad j = 1, 2, \dots, n. \tag{5}$$

**Step 3.** The weight of each index is obtained using the following equation:

$$W_j = \frac{d_j}{\sum_{i=1}^m d_j}, \quad j = 1, 2, \dots, n. \tag{6}$$

If a matrix is formed based on the experts' opinions and the decision-maker has a subjective judgment for the weight vectors of the indices and wants to involve it in the weighting of indicators, the adjusted weights ( $\hat{W}_j$ ) are calculated as follows:

$$\hat{W}_j = \frac{\lambda_j W_j}{\sum_{j=1}^m \lambda_j W_j}, \quad \lambda = (\lambda_1, \lambda_2, \dots, \lambda_n), \quad \sum_{j=1}^m \lambda_j = 1. \tag{7}$$

### 4.1 | Formation of the Decision and Normalization Table

Table 1. Frequency of the responses to the questionnaire items (to form the decision table).

Criteria	Brand Awareness	Brand Association	Brand Trust	Brand Communication	Perceived Brand Quality	Brand Loyalty	Advertising
Experts							
4	4		4	4	4	4	4
2	4	4	4	4	4	4	4
3	3	4	3	2	4	3	3
4	1	2	3	2	2	3	1
5	3	3	3	2	3	3	2
6	4	3	3	3	4	4	2
7	3	3	2	3	4	3	2
8	4	5	4	5	4	4	3
9	4	4	4	5	4	4	5
10	5	2	3	2	5	5	5
11	3	4	3	4	4	4	5
12	3	3	2	2	2	3	2
13	2	2	1	3	4	5	3
14	4	4	4	4	5	4	5
15	4	4	4	4	5	4	5
16	5	4	4	3	3	5	2
17	4	4	3	4	4	3	3

**Table 2. Normalization of the decision table.**

Criteria	Brand Awareness	Brand Association	Brand Trust	Brand Communication	Perceived Brand Quality	Brand Loyalty	Advertising
Experts							
1	0.0667	0.0678	0.0741	0.0714	0.0615	0.0615	0.0714
2	0.0667	0.0678	0.0741	0.0714	0.0615	0.0615	0.0714
3	0.050	0.0678	0.0556	0.0357	0.0615	0.0462	0.0536
4	0.0167	0.0339	0.0556	0.0357	0.0308	0.0462	0.0179
5	0.05	0.0508	0.0556	0.0357	0.0462	0.0462	0.0357
6	0.0667	0.0508	0.0556	0.0536	0.0615	0.0615	0.0357
7	0.050	0.0508	0.037	0.0536	0.0615	0.0462	0.0357
8	0.0667	0.0847	0.0741	0.0893	0.0615	0.0615	0.0536
9	0.0667	0.0678	0.0741	0.0893	0.0615	0.0615	0.0893
10	0.0833	0.0339	0.0556	0.0357	0.0769	0.0769	0.0893
11	0.050	0.0678	0.0556	0.0714	0.0615	0.0615	0.0893
12	0.050	0.0508	0.037	0.0357	0.0308	0.0462	0.0357
13	0.0333	0.0339	0.0185	0.0536	0.0615	0.0769	0.0536
14	0.0667	0.0678	0.0741	0.0714	0.0769	0.0615	0.0893
15	0.0667	0.0678	0.0741	0.0714	0.0769	0.0615	0.0893
16	0.0833	0.0678	0.0741	0.0536	0.0462	0.0769	0.0357
17	0.0667	0.0678	0.0556	0.0714	0.0615	0.0462	0.0536

## 4.2 | Calculating Shannon’s Entropy for each Index

**Table 3. Calculating the entropy for each index.**

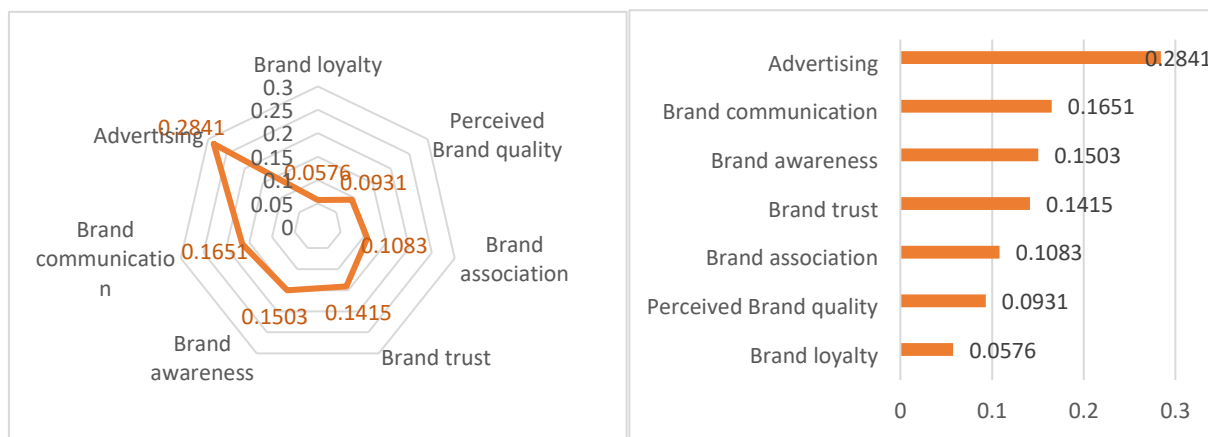
$(-K * P_{ij} * LN(P_{ij}))$	Brand Awareness	Brand Association	Brand Trust	Brand Communication	Perceived Brand Quality	Brand Loyalty	Advertising
1	0.0637	0.0644	0.068	0.0665	0.0606	0.0606	0.0665
2	0.0637	0.0644	0.068	0.0665	0.0606	0.0606	0.0665
3	0.0529	0.0644	0.0567	0.042	0.0606	0.0501	0.0553
4	0.0241	0.0405	0.0567	0.042	0.0378	0.0501	0.0254
5	0.0529	0.0535	0.0567	0.042	0.0501	0.0501	0.042
6	0.0637	0.0535	0.0567	0.0553	0.0606	0.0606	0.042
7	0.0529	0.0535	0.0431	0.0553	0.0606	0.0501	0.042
8	0.0637	0.0738	0.068	0.0761	0.0606	0.0606	0.0553
9	0.0637	0.0644	0.068	0.0761	0.0606	0.0606	0.0761
10	0.0731	0.0405	0.0567	0.042	0.0696	0.0696	0.0761
11	0.0529	0.0644	0.0567	0.0665	0.0606	0.0606	0.0761
12	0.0529	0.0535	0.0431	0.042	0.0378	0.0501	0.042
13	0.04	0.0405	0.0261	0.0553	0.0606	0.0696	0.0553
14	0.0637	0.0644	0.068	0.0665	0.0696	0.0606	0.0761
15	0.0637	0.0644	0.068	0.0665	0.0696	0.0606	0.0761
16	0.0731	0.0644	0.068	0.0553	0.0501	0.0696	0.042
17	0.0637	0.0644	0.0567	0.0665	0.0606	0.0501	0.0553

The table and figure below show the data for weighting the criteria using Shannon’s entropy. After preparing the table, the respondents normalized all these numbers. Then, by replacing the  $P_{ij}$  values in Eq. (4), the  $E_j$  values were obtained. Afterward, the estimated values were replaced in Eqs. (5) and (7), and the  $W_j$  and  $d_j$  values were estimated for each index as shown in Table 4.

As can be seen, advertising with a weight of 0.2841 has the highest rank as a factor affecting brand strengthening drivers in e-commerce in the tourism industry, and brand loyalty has the lowest weight.

**Table 4. Ranking the indices using Shannon's entropy method.**

Indices	Brand awareness	Brand association	Brand trust	Brand communication	Perceived brand quality	Brand loyalty	Advertising
Entropy (E <sub>j</sub> )	0.9844	0.9887	0.9853	0.9829	0.9903	0.994	0.9705
Deviation (D <sub>j</sub> )	0.0156	0.0113	0.0147	0.0171	0.0097	0.006	0.0295
Weight (W <sub>j</sub> )	0.1503	0.1083	0.1415	0.1651	0.0931	0.0576	0.2841
Rank	3	5	4	2	6	7	1
Total weight	1	K = 0.3530					



**Fig. 1. Ranking the indices using Shannon's entropy method.**

## 5 | Conclusion

The present study analyzed the factors affecting brand strengthening drivers in e-commerce in the Iranian tourism industry. The findings indicated that advertising is one of the effective brand strengthening drivers. Advertising involves visual-verbal messages that, through paid advertising, make people interested in a particular product, service, thought, idea, or brand. Advertising can help build brand strengthening as long as the consumer relates human characteristics to the advertised product. Accordingly, the results of this study showed that advertising as one of the effective sales promotion drivers is effective in brand strengthening. Thus, it should be noted that the development of tourism and advertising in a specific process are closely linked because tourism in the development process is part of the economic production structure that can play a fundamental role in expanding production and income and creating employment in countries. The results also indicated that brand communication is the second most important factor affecting brand strengthening. Psychologically, customers can develop reciprocal relationships with brands, which take the form of human relationships through advertisers. These relationships allow tourists to evaluate the brand personality. Similar to the process that involves the formation and maintenance of interpersonal relationships, brand communication affects the tourists' behavior toward a brand through cognitive behaviors and emotional communication with the brand. Besides, given the rank of brand awareness, it can be argued that social media can have a positive impact on tourists. Sharing memories may be the most important factor affecting the tourism industry. Social media enables tourists to share the most important memories of their travels with many audiences. When those involved in the tourism industry become aware of the potential benefits of social media for the prosperity of the industry, they will pay more attention to the prominent role of e-commerce in increasing brand awareness in e-tourism.

Following the findings of this study, the tourism industry needs to create a mechanism to improve the current situation. Thus, an effective program must be developed and implemented based on the marketing approach and attention to branding strategies. Consequently, a wide range of e-tourism services should be promoted to help improve brand loyalty. Thus, marketing principles and issues that lead to brand strengthening need to be revised quickly through further studies and investments. A prerequisite for brand strengthening includes identifying and ranking effective drivers to implement specific strategies for marketing development. The government must also supervise national tourism organizations and take effective measures to facilitate branding efforts and ultimately strengthen the brand through an electronic mechanism in business processes.

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